

Hobbies

WEEKLY

CONTENTS

	Page
One-Runner Sleigh	141
Finger Puppets	143
Party Magic	144
2-Band Crystal Set	145
General Notes	146
Novel Shooting Alley	147
Winter Hiking	148
Simple Epidiascope	149
Shooting Gallery Patterns	151

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Be ready for the snow with a ONE-RUNNER SLEIGH

JUMPER" sleighing is a new winter sport that has originated in America. It means plenty of thrills, spills, and fun, for the novel "sleigh" consists of a runner and a seat, as shown. The user, sitting astride the low seat, has to guide the

device, and maintain balance by the dexterous use of the feet.

Since the runner is only 24ins. long, and the seat 10ins. to 12ins. high, one does not fall far should one over-balance, due to the jumping of the runner over bumps and hollows in a snowy incline. If the incline is fairly

steep, and the snow fairly hard, the sleigh skims over the surface at a great rate.

Legs and feet are apt to swing in all directions in an effort to keep a good balance. Coming to hollows, the sleigh seems to drop into them quicker than the rider, then comes up just as the rider is beginning to drop on the seat. This jumping about, slithering, skidding, sprawling the legs, kicking up furrows of snow with the feet, etc., is part and parcel of the sport.

Runner and Column

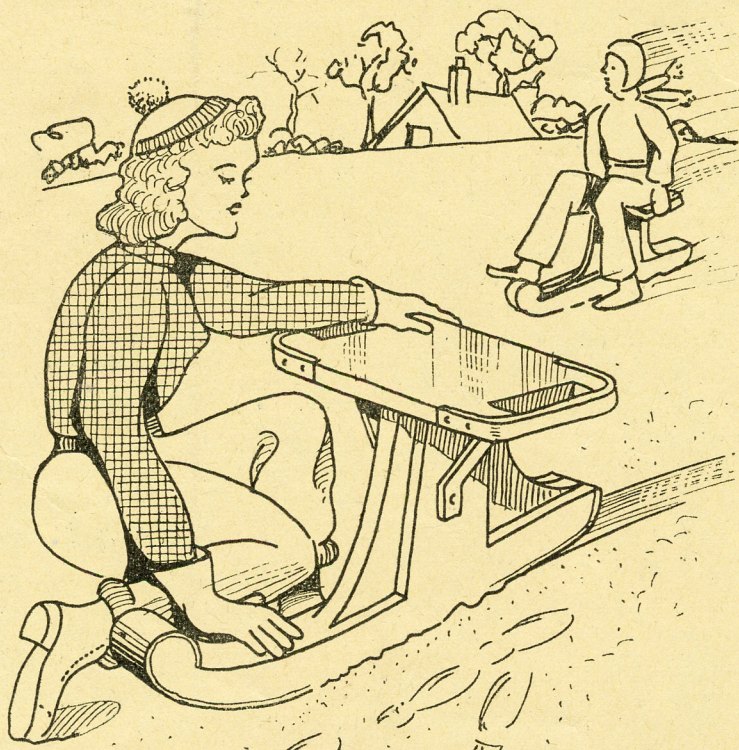
The runner and its column is generally cut complete from a plank 24ins. long by 10ins. wide by 2ins. thick, but you cannot afford to use wood in this manner. The alternative is to use 1in. thick and ½in. thick wood.

The main part is cut from 1in. stuff. This is shown at Fig. 1, and consists of a runner and column piece, the latter being affixed to the runner with dowelling. Approximate sizes are provided.

Having cut out the parts and assembled them, build up a 2in. wide runner and strengthen the column joint with upright stiffener pieces, as in the elevation. To do so, you require two runners cut from ½in. wood to the dotted line. The upright pieces are also cut from ½in. wood.

Glue and nail (or screw) the extra runner pieces to the main runner, one at each side, then add the upright pieces. Before going further, proceed to level the runner with a plane and a spokeshave.

The next thing to add is the metal cover, or shod, to the runner. This



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metal shod is 2ins. wide or thereabouts, by about 3ft. long. It should be $\frac{3}{4}$ in. thick, but any sheet metal, preferably mild steel, may be used. Holes are bored here and there where thought essential, then countersunk for suitable flathead iron screws. The strip of metal is then bent into shape so it fits on the runner, following

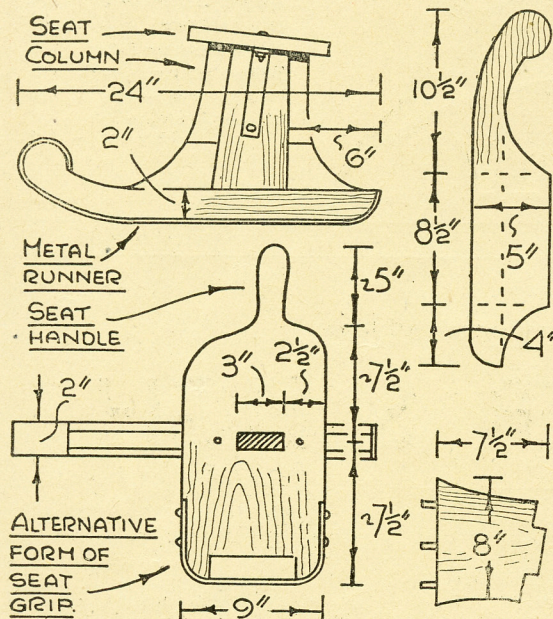


Fig. 1—Side elevation with top plan and runner details

which the screws are inserted.

The Seat

There are two ways of cutting the seat. You can, for instance, make a plain seat, 15ins. by 9ins. by $\frac{3}{4}$ in., then

shape the ends, as shown in the top plan, and fit metal grips—flat bars of metal affixed with screws. The other way is to cut the seat so handles are provided at the ends. These handles are rounded over slightly, including the remaining edges of the seat shape.

The handles, however, rather stick out in the way, and you have less control over the jumping sleigh. There is really no actual need to have handles or grips. A bead of wood, firmly attached to the underside of the seat near the ends, will give a good grip for the hands.

The seat, of course, has a mortise which fits tightly into the tenon provided on the top of the main column. Glue the seat well to this, then drive in a flathead screw to increase the strength, as indicated. By the way, note the direction of the grain of the wood of all parts to be cut out.

The seat is further strengthened by means of metal brackets which can be obtained at a hardware store. These are merely flat, right-angle brackets which screw on. You could make a pair easily from flat bar, but as they only cost a few pence per pair, it is better to buy them. They should be 4ins. or 5ins. long. The home-made variety are indicated in the sketch. These, however, could be the right-angle type,

as used for supporting shelves, etc.

Finishing the Sleigh

All that remains is to file all runner screw heads flush with the metal shod, then give the novelty a coat of enamel paint, or two coats. Bright green is a good colour. As usual, allow the first application to dry before applying the other coat on top.

Do not have any sharp edges on the sleigh. You will, of course, be wearing thick gloves or mittens, while using the sleigh, but a shiver of wood can easily penetrate gloves and mittens. If you have used deal throughout the construction, and do not bother to apply the finishing coats of enamel or remove all sharp corners, it should be remembered that every time the unfinished wood comes into contact with snow or slush, it swells, and in doing so, small shivers of wood, at the sharp edges, may be raised.

A bare or gloved hand, sliding along the edge, could be badly torn or punctured with pieces of the roughened, swollen wood. Therefore, use glasspaper—and apply at least one coat of enamel paint.

Early Practice

Practice using the sleigh on inclines which are not too steep. Take everything easy, and use your feet mainly to retain your balance. For turning, brake with one foot, meanwhile giving a twisting action to the seat. The sleigh, possessing only a single runner, is not unlike a ski. It can, in the same way as a ski, be turned by leaning over to one side—the side you wish to turn. If you remember that you are riding on a big form of ice-skate, you will soon get the hang of using the sleigh properly.

Lead Moulds

PLEASE give me any information as to the making of the hollow type of toy tin soldiers. (A.W.A.—Sheerness).

THE method of making hollow lead toy soldiers and the like, is quite simple. You need a closed mould, made in two halves and held together with any simple form of clamp. Air-holes are made through the mould at all strategic points to allow egress of air. The molten lead is then poured into the top of the mould (which may conveniently be the base of the soldier or other object), and the lead is then at once poured out again.

This is possible because the lead adjacent to the mould chills and sets very quickly, but that in the middle remains molten. The result is, on opening the mould, a hollow casting. The mould must be cooled from time to time, and in some cases must be made thick in some places (to

absorb heat) and thin in others—for example, where the quantity of metal poured in is small; because the thin walls of the mould heat more quickly and keep the metal fluid enough to enable the centre metal to flow out again.

Block Plane Mouth

IHAVE a Block Plane but when I start planing wood, it gets clogged. Could you please tell the way to stop it? (W.F.—Guernsey).

THE cause of the shavings getting choked is due either to the plane iron not bedding down correctly, or a too narrow mouth. There must be no obstruction to the passage of the shavings. Clean out the mouth of the plane and also clean the iron and wedges. Then try again.

If the fault still occurs, examine the mouth of the plane. There should be a clearance space of $\frac{1}{16}$ in.—not more—between the edge of the iron and the mouth, to allow passage of the

shavings, and if necessary, the mouth should be widened to permit this.

You do not state if the iron is a double or single one, but if the former, see the top iron lies flat on the under one, and is so fixed as to be level across, and come to $\frac{1}{16}$ in. from the extreme cutting edge. If you push the plane firmly but slowly along a piece of soft wood, you will be able to see exactly where the shaving gets obstructed.

Model Yacht Varnish

BUILDING a model yacht, I am unable to get a good boat varnish. Can you tell me a substitute I can use for the deck, mast, spars, etc.? (F.B.—Liverpool).

IN the absence of a yacht varnish, you cannot do better than use any good outdoor grade of pale copal varnish. There are many makes of this class of varnish, but the brand known as "Orlik" has proved satisfactory.

How to amuse your friends by making FINGER PUPPETS

PUPPET-MAKING is a hobby which gives hours of pleasure to those who once try it. For the price of a pound of Plasticine you can purchase the main material required. A modelling stand can be made from an odd piece of wood, with a 6in. nail hammered up through it, as shown in Fig. 1. The only other equipment needed to commence is a paste brush, a piece of tissue paper, two pages of newspaper, and a small quantity of Vaseline.

The amount of clay to be used will vary with the size of head required, and this in turn is really decided by the size of your hands. If you have small hands, use half-a-pound, or for

with this layer, as the grease will act as a mild adhesive. Use smaller pieces for covering the eyes, nose, lips and ears. Repeat the process, but this time using printed newspaper, pasting each piece edge to edge.

Paper Layers

The next layer may be plain newspaper torn from the edge of the page. By this means of alternating plain and printed newspaper it is easy to see just where more paper is required to make a completed layer. Five or six layers should be applied in a similar fashion, and then the whole should be left for twenty-four hours to dry out. This will give a firm hard surface.

The Plasticine must now be removed. One sound method is to cut the head from the top down behind the ear, through the side of the neck, and similarly on the other side, using a sharp penknife.

With careful easing, the back 'shell' will come away (Fig. 2), and the clay remaining in the front

wise to cover the joint. Give the whole two more layers of newspaper, one print and one plain. A slightly better finish can be obtained with a final layer of tissue paper. Allow the head to dry out once again.

While the head is drying you can make the two tubes to take the hands. Decide on which of your hands you wish to work the puppet and make one tube to fit the thumb, and the other to fit the little finger.

Hands can be cut out of cardboard, curved inwards, and the wrists bound round with pasted paper until they form a plug to fit into the end of the tubes. Remember, the thumbs must be uppermost when fixing.

Painting

If the head has been placed in a warm place it should now be ready for painting. Water, poster, or powder colour may be used. A coat of light flesh colour should be applied, and while still wet, slightly darker patches of red or burnt sienna can be worked into the cheeks, nose, and other prominent parts. Avoid 'wooden soldier blobs'.

The eyes have a white base and the iris is coloured as desired, the pupils are painted black. Paint in the eyelashes for female characters. The lips should be brightly painted, the top slightly darker than the lower lip. High-lights may be painted in white where necessary (i.e., eyes, cheeks). Hair and eyebrows can be very effective if wool or fur is used, but, of course, they also may be painted in.

The head completed, it only remains for the clothes to be made.

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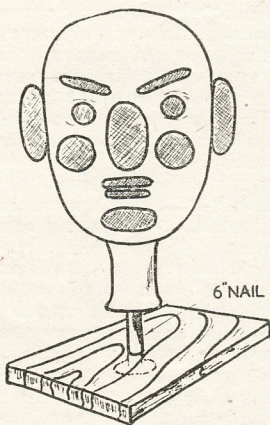


Fig. 1—Rough outline on a simple base

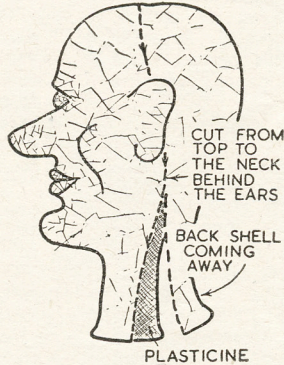


Fig. 2—Shaping the head

large hands, use the full pound. Three-quarters of the amount used is placed on the nail in rough shape, similar to that shown in Fig. 1. The neck piece should be just over finger thickness.

The remaining quarter is needed to build up the prominent features of the face. A beginner must not be afraid to exaggerate the eyebrows, nose, cheekbones, mouth, ears and chin (see Fig. 1). If you are in doubt as to the position of these extremities, glance casually at whoever happens to be around. This practice usually gives excellent results.

Simple Tools

Modelling tools may be used, but a penknife or an odd knitting needle, together with your fingers, will soon achieve the desired results.

The next process is to smear the head with Vaseline, and cover it with a layer of torn tissue paper. Use pieces approximately the size of a postage stamp. No paste is needed

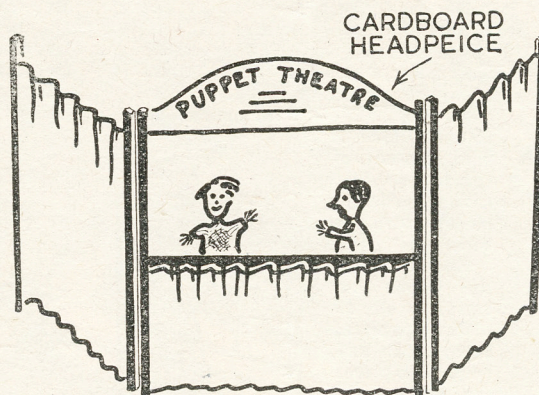


Fig. 4—The puppets operated behind a clothes horse

half can be scraped out with the penknife. Hold this front shell up to the light; if any weak places can be seen, reinforce with small pads of paste-soaked paper.

At this stage it is necessary to prepare a finger size tube of thin cardboard. Paste the tube inside the front half of the neck, securing it with a strip or two of pasted newspaper. Now you must join the front and back with pasted strips, length-

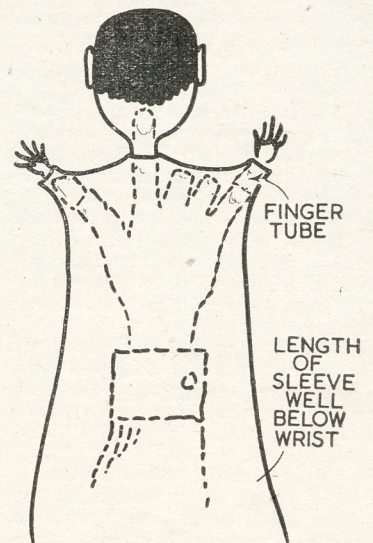


Fig. 3—How the puppet fits over the hand and wrist

Prove yourself popular by learning how to do SOME PARTY MAGIC

DURING the party season, the fellow who can do some conjuring tricks is always popular. Here are some simple but effective tricks you can make up.

The Vanishing Pictures

Here is an up-to-date version of a grand old "classic" effect. To make it, you must first gather a number of pocket-size magazines of the *Lilliput*, *Men Only*, *Town & Country*, etc. type . . . i.e. well illustrated and, also a copy of an unillustrated magazine of the same size, say, *The Reader's Digest*.

Take the wire staples out of the magazines, and make up a new, composite magazine which has pages alternately plain print and full-page photos. Put a cover on and re-insert the staples.

By means of a Star type razor blade and a metal rule, trim the edges of the new magazine. When this is done, go through the magazine again and trim about 1/16in. off the long sides of the picture pages only.

The book is held in one hand, by the back, and the pages flipped over with the thumb, either downwards (from first to last pages) or upwards (from last to first pages). According to how the pages are flipped, the book can be shown either completely illustrated or completely unillustrated. It is as well to paste a thin brown paper cover over the illustrated cover.

For "patter" you can spin a yarn about an illustrated magazine where the photographers all went on strike, and consequently the magazine appeared without photos. However, there was a happy ending. The dispute was ended and the magazine appeared full of pictures again.

The Perambulating Pencils

The amateur wizard shows a fold-over type of pencil case (as illustrated) From this he extracts a couple of pencils, and closes the case. The pencils are placed in a long envelope.

At a word of command, the magician orders the pencils to fly home. The envelope is crushed flat : the pencils have gone. On opening the case, the pencils are found there, secure in their loops.

Actually there are two pencil cases sewn back to back. One side has a couple of genuine pencils inserted in the loops, but the other has two dummy pencils. These are mere paper tubes.

Take a pencil and roll a piece of paper round it so that there are about three or four thicknesses of paper. The paper is glued permanently to the pencil, and when dry is well waxed, by rubbing a candle on

it, and polished. This is the former.

Now obtain some flint paper (glossy coloured paper) and cut it into suitable lengths so they can be rolled round the former, pasted neatly, and then slid off. (Do not get any paste on the former itself). The tubes should be reasonably stiff. You can make two or three dozen at a time. Obtain some pencil stumps, and insert a pointed piece in the top of the tube and a plain piece in the other.

From a short distance these fake pencils look the real thing, but when in the envelope they can be crushed flat to show that they have "gone". The pencil stumps can afterwards be retrieved and used again.

The pencil case is, of course, reversed when re-opened. In order to make the pencils match, paste some of the flint paper over the genuine pencils, too.

The Circle of Magic

This is a very baffling trick but, like most good tricks, the secret is absurdly easy.

The magician takes a piece of paper about 3ins. square. He folds it in half, and then in half again, so that, when opened, it shows folds at right angles to each other. Using the intersecting lines as a centre, a circle of about 1in. diameter is drawn (freehand). Around this circle, the performer draws other symbols, as shown, explaining (with his tongue in his cheek) that this is an ancient symbol of mystery and magic.

The paper is given to any spectator who is asked to write, in the "circle of magic", the name of anyone. The paper is again to be folded and handed to the performer who does not, of course, see what has been written. He can turn his back.

He now takes the paper and tears it into small pieces, and places them on an ash-tray. The pieces are set on fire (so stiff, tough paper should not be used). Using the pencil as magic wand, the performer "sorts out" (?) the ashes into little pieces. This business is actually a fake but it is necessary to work up the right atmosphere

"Here I see an E", says the magician, "And here's another just like it. This looks like an R. This one is something like it but it hasn't a tail. It's a P. This is a T. T. P. and two E's". He sorts out the heaps a bit more. "I have it. It's PETER."

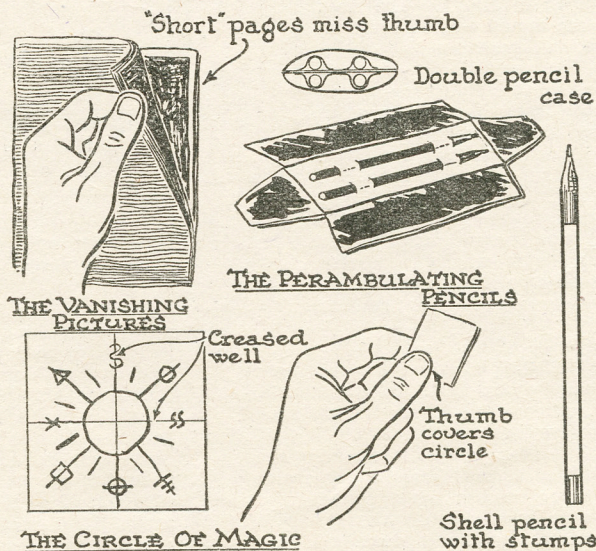
Simple Solution

The spectators are quite impressed, and would kick themselves to find how easily they have been tricked. The creases first made in the paper are sharp ones, so that when the paper is refolded, the helper folds it in its original creases. The performer takes the paper between his left first finger and thumb which just cover the circle in the centre.

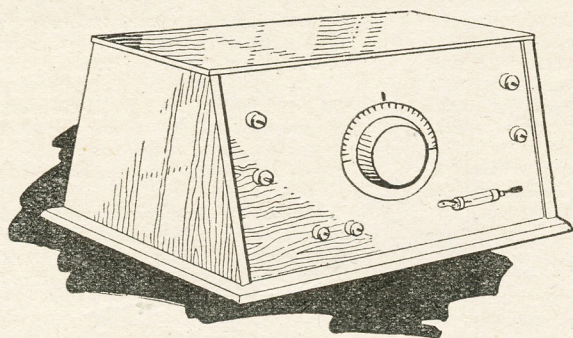
The paper is torn up, but the centre part is retained . . . a very easy matter. Whilst the paper is burning, the conjurer says that he does not want to catch a glance so he will turn his back. This gives an opportunity of opening and reading what was on the centre of the paper.

Simple as this is, it should be practised well in advance, and should not be repeated. When people urge you to repeat a trick they really mean "You caught me that time but I bet you don't do it twice. I'll be on the look-out this time". You should not give them the chance ; get on with another trick.

The diagrams below illustrate these tricks quite clearly, and with a little quiet practice you should be able to carry them out perfectly. Do not, of course, leave it until the last minute to do this, and endeavour to pass them off with casual and witty patter which will definitely help the effect.



Earphone reception up to 100 miles on this straightforward TWO-BAND CRYSTAL SET



THIS crystal receiver tunes the usual Long and Medium wavebands and the circuit is intended to give the maximum volume. Good earphone reception is possible at a distance of up to 100 miles or so from one of the more powerful B.B.C. stations, and even at greater distances volume may be satisfactory. During the hours of darkness some foreign stations may be heard, but long-distance reception should never be expected from a crystal set.

Obtaining Maximum Volume

The aerial and earth should be good. A long, high outside aerial is best, well clear of all surrounding buildings and trees. If a short indoor aerial is used volume will be reduced somewhat, though it may still be sufficient, especially if the aerial is in an upstairs room.

The earth lead should be connected to a metal object buried in damp soil, or to a water-pipe or other object in

contact with the ground. If no earth is used, volume will be severely reduced.

Outside the receiver itself, the remaining point to attend to is the headphones. Some headphones work more loudly than others so a reasonably good pair should be used. They should have a resistance of about 500 to 4,000 ohms (this is usually marked on the phones), and the special low-resistance pairs made for other purposes should be avoided.

Making the Case

The detail at Fig. 4 shows the sizes to which the pieces of wood should be cut to make a small cabinet with a sloping front. Sides and bottom are made from $\frac{1}{2}$ in. thick wood and the bottom is bevelled along the sides and front.

For panel and top three ply is suitable, with the panel set back slightly on strips fixed to the sides. Further strips fixed to the top enable this to be lifted off. Alternatively, hinges may be fitted so the top can be opened.

The whole cabinet should be varnished, and the panel may be a different shade. Sheet ebonite and Paxolin are obtainable for panels, and this would give a better finish, if used.

The position of the various parts will be seen from Fig. 2, which also

shows outside connections. Any type of permanent, semi-permanent, or adjustable detector can be used. Small bolts secure it to the panel.

Opposite will be seen two terminals which can be bridged with a wire link. When this link is in position Medium Waves are tuned; when contact is broken, Long Waves are received. An on-off switch can be used instead of this arrangement.

In the centre is the .0005 mfd. tuning condenser, with knob or dial. An air-spaced condenser is best here, though a solid dielectric one will function quite well. With the latter, however, volume is very slightly reduced because the insulation is not so good.

For Aerial, Earth, and Phone connections, fairly large terminals are usually most convenient.

The Coil

The coil is clearly shown at Fig. 3, and when finished, it is mounted on small wooden blocks.

The diameter of the former and gauge of wire used can be varied within quite large limits. A tube can be made from thin glued cardboard wound several times round some object of convenient size (about $1\frac{1}{4}$ ins. to $1\frac{3}{4}$ ins. in diameter). When the glue has set, the tube should be varnished to exclude moisture.

The Medium Wave section is wound between points 1 and 2. It consists of about 70 turns of 32 to 28 S.W.G. wire. The turns are closely side by side and the ends can be secured by passing them through pairs of small holes in the former.

For the Long Wave section, between points 2 and 3, about 200 turns are used, divided into two piles of 100 turns each. Leave about $\frac{1}{4}$ in. between the piles. All turns must be in the same direction, and a thinner wire (about 36 S.W.G.) is most suitable.

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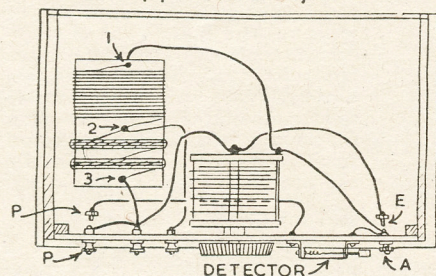


Fig. 1—Wiring diagram of the set

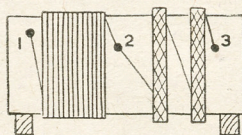


Fig. 3—The tuning coil

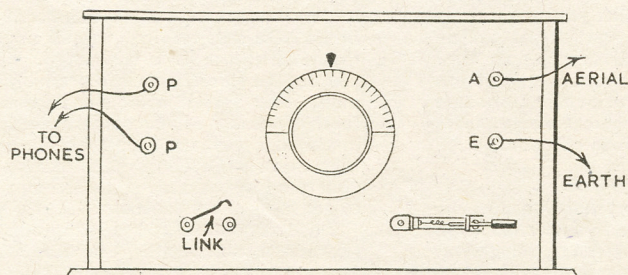


Fig. 2—Panel layout showing connections

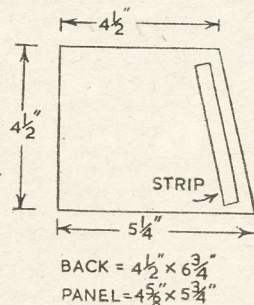


Fig. 4—The pieces required for the case

Hints on how to keep and use your tools in these GENERAL NOTES

THE aim of the handyman at home should naturally be to have as wide a range of tools as possible, and you may frequently envy the man with the complete cabinet of everything he needs for whatever job comes along. Such a position is more likely to have happened to those who had the idea in mind before the war, because now many of the pre-war tools are unobtainable and the average amateur will at least find them beyond the range of his own pocket.

It is, of course, impossible to acquire this ideal complete range in five minutes, or even five years, and the reader should always have his eye open for adding whatever he can at every opportunity. To have a complete kit of tools, means virtually that you have to have a wide range of every single one.

Varieties

For instance, there are at least half a dozen different types of hammer which must be in your collection if you are really going to cover everything, but then, of course, few amateurs are likely to do this. Not many, for instance, will have sufficient need of a slate-maker's hammer to make it worth while purchasing such a tool. Or, of course, you can say the same about pliers and nippers.

There are various sizes with various types. There are the plain ones for small work, or the larger handyman variety with wire cutters and grips incorporated. Then, of course, we all know the variety of screwdrivers which are to be found. The point is that you should know which are the best to use, and have them in your tool kit, gradually adding as you can from time to time.

Use the Right One

How often, for instance, do you find a fellow using the right size of screwdriver for the particular screw he is putting in? The driver is either too large or too small, and in any case, is causing a lot of unnecessary labour and waste of time. Two or three sizes of screwdriver are normally sufficient for the average tool box although one is wise to add from time to time.

A screwdriver, remember, should fit exactly into the slot of the screw so that the mere turning of it will allow the screw to cut its way through the fibres into the wood and make a secure fixing. It is always wrong to endeavour to force a screw home with a lot of unnecessary pressure.

The same applies to saws, both regarding variety and use. There is no point in using a large hand saw to cut a small piece of wood. Or the

other way round. If you can only commence with one tenon saw, a 10in. is quite a handy size. The next time you have the opportunity, get a smaller one, and then a larger, thus you will have three for normal work. In addition, a handsaw will be necessary for the larger bench work, and here about a 24in. blade will be serviceable.

Question of Quality

The quality of the saw depends on the actual steel used. In a good handsaw you should be able to bend the toe right round to the handle and when it springs back it will become quite straight again.

The quality of the steel, too, affects the cutting, because the teeth will remain sharp and set at the right angle. If you get inferior quality, then the teeth cannot be sharpened so well, and will only tear the wood instead of cutting through it clean and smooth.

It is a common fault in connection with this tool, to use it on damp wood and then hang it up without wiping, for the atmosphere of the shed in which it is kept may not be dry. In consequence, the blade of the saw becomes damp and in turn rusts badly. This should be prevented, not only because the rust itself eats into the metal, but also because the rust forms a surface creating a great amount of friction when cutting.

Cleanliness

Do keep your sawblades clean, therefore. A rubbing of thin oil before they are hung away will save any trouble arising. If you are doing any fancy work, remember, however, to wipe the oil off before you commence to cut, otherwise it will mark on the wood and leave a blemish which is difficult to remove.

The handyman who is keen on increasing his tool kit will be well advised to keep his eye on local auctions or sales or even second-hand shops. Most of the articles which come forward in such places as this are pre-war manufacture, and therefore likely to be of superior quality and more lasting value than recent ones. Again, whilst you may not be able to afford the actual article yourself, it would serve as an ideal birthday or Christmas present if you can only let suitable people know that it is the thing which would please you most for such an occasion.

A Source of Supply

Then again, most men at some time or other, have had tools of their own, but possibly have given up using them as they did in their younger days. In consequence, here is another source

of obtaining what you need, merely by mentioning it to fellows who would be only too glad to help you. If you lead the conversation round to the need for, say, a special chisel or mallet, or something of that sort, it is surprising how many people come with the answer "Oh yes, I have one of those".

If this is judiciously followed up you will probably find that the tool in question is not being used, and would be released to you for a small sum or even as a mark of friendship for a gift. Whilst these tools—the second-hand ones, anyhow—are sometimes worn and rusty, they are certainly worth giving a little care and attention to bring them back to a useful life.

Use of Emery

Emery cloth will clean most rust and grease away from a cutting blade or turning tool, and a rubbing with linseed oil on wooden handles or tool bodies, will clean away old markings and bring the former polish back to a certain extent. Of course, you should not have the actual handle of any tool marked with oil or grease, because if you do, the hand is apt to slip in use, with some danger to the user.

We cannot too strongly stress the need for keeping tools neatly and in a clean condition. Too frequently they are shot into a drawer after use, or put away in a pile in a shed which may be damp and certainly is not dust-proof. For your own sake, it is as well to clean every tool after you have used it, and put it away, not only to be ready for the next occasion, but also handy when you need it. Flat hanging cabinets on the wall can be made to hold quite a lot of small-handled tools such as chisels, drivers, bradawls, etc. Metal racks are obtainable into which these handled tools can be fitted, or you can cut a simple rack yourself from a piece of wood, and fit it in place in the appropriate position.

A Tool Chest

Larger tools can be kept in a proper tool chest, particulars of which have already been given in these pages. A large box with hinged lid is ideal, but it must be properly fitted inside. Do not just open the lid and throw all the tools in haphazard. If you do, the chisel blade will probably blunt itself against some metal, the teeth of the saw will become damaged in a similar way, and even apart from that, there is the likelihood of tearing your hand the next time you attempt to get some of the tools out.

This last point, of course, brings up another essential which should be

(Continued foot of page 147)

Patterns for a novel but simple game to make — A SHOOTING ALLEY

HERE is a game that will give hours of fun and amusement. It consists, as our sketch shows, of a castle wall or gateway guarded by men in uniform and equipment of the 15th century. All four men are cut from card or thin wood and mounted on a cardboard disc so they stand firmly each within an archway of the wall.

At an agreed distance from the wall is the contrivance for bowling over these sturdy warriors. Now, various suggestions will occur to our workers for doing this, and two are given here as simple and easy to make.

Back Wall

Before, however, we tell how to make them we are going to deal with the making of the archways and wall. On cover iii of this issue we give full size patterns of the wall. All that is necessary therefore, is to cut this page from the book, paste down the pattern on to thin wood or stout card and cut round it with a fretsaw. A really substantial job could be made by using wood, as card, whatever its thickness, would in time be liable to get bent and broken.

Use wood $\frac{3}{16}$ in. or $\frac{1}{4}$ in. thick and paste the pattern to it, getting it nicely flat by pressing out the air bubbles. When the paste is dry cut round the outline and the arches with the fretsaw and lightly glasspaper the

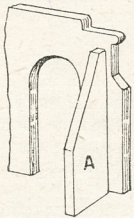


Fig. 1—Back view showing wall support

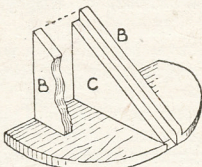


Fig. 2—A simple rolling chute

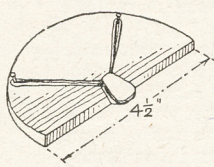


Fig. 3—Catapult and pellet type

back edges to take away the burr left by the saw.

There are two ways of finishing the face of the wall where the stonework shows up realistically. Either the pattern can be left on the wood and varnished to make a good surface for handling, or a tracing can be made of

it and the whole surface then painted grey, or stone-colour, and the stone courses put in with a fine brush.

To make the wall stand upright, two shaped pieces, as A on the pattern sheet, are cut out and glued on the back (see Fig. 1) for the correct position for fixing these. The back of the wall should also be painted or varnished.

Firing

Continuing with the gadgets for knocking over the men, we show in the sketch how the simple method of trundling a coin down a slope can be made. The coin is held with finger and thumb in a groove, and on its release it runs some distance before toppling over.

The idea is to hold the coin in such a position that it faces one of the men, and if it works out, the coin should enter the archway and do its job. The construction of the running board is easily explained in Fig. 2.

First a baseboard is cut from, say, $\frac{1}{4}$ in. wood, semi-circular in form and measuring $4\frac{1}{2}$ ins. long. Upon this is glued three triangular pieces, two as B on the pattern sheet and one as C. The three pieces will be glued firmly together as in Fig. 2, the near piece B in this diagram being drawn away and cut so as to display how the groove is formed.

There are, indeed, a hundred and one things which may happen, and the wise handyman will see that some small first-aid remedies are handy. Some lint, bandage, healing ointment, Dettol, scissors and safety pins are all that is necessary, and these should be kept handy in a box—an old cigar box will do.

Such a box should always be kept

The edge of the base between the two pieces B must be filed to a slope to correspond with piece C so the coin when running will clear the base smoothly. The finished thing can be either painted or varnished.

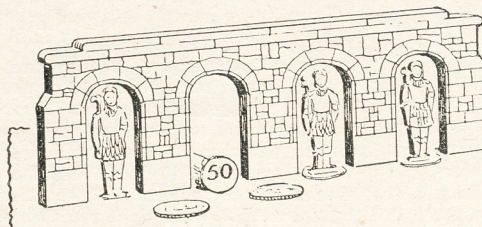
The second method for knocking over the men is even more simple than that just dealt with. Into the same semi-circular base two wire nails are driven and spaced out somewhat as shown in Fig. 3. Round these nails an ordinary elastic band is looped which, when pulled forward, forms a propelling force for a strip of paper so folded that it is held round the elastic by finger and thumb. Fig. 3 shows this idea—minus the fingers of course.

The Figures

On the pattern sheet given we show the four figures which should roughly be cut round with scissors and then stuck down to thin wood or stout card. The patterns should, in this case, be left on the wood, and the whole then painted in water colour. The discs on which the soldiers are to be glued should be stout card, size as shown at D on the sheet, and they, too, should be painted.

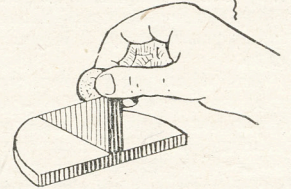
The game is played by knocking down a soldier and scoring according to the number on the bottom of the disc. It must first be decided how many shots are to be fired by each player. The player who first makes, say, one hundred, proves the winner. Of course there will be many ways of arranging the scoring and the number of players.

in one place, and can be made more appropriate by painting a Red Cross on the lid or door. Keep it in the same place, because otherwise you will have trouble to find it and waste valuable time searching for the very thing which should be helpful to you at a minute's notice. See too, it is always replenished after you have used any of the contents.



Roll the coin down the chute to knock over the sentry figures

Full size Patterns on page 151



General Notes—(Continued from page 146)

found handy in a workshop, but seldom is. No matter how careful the worker endeavours to be, an occasion is sure to arise when he does some injury to himself which demands immediate attention. A chisel or screwdriver which slips can make a nasty cut or an ugly gash. A screw or nail may tear the skin in a painful manner.

How to get real enjoyment when you undertake WINTER HIKING

IT is good fun hiking in winter, but choose your day. Frequently, we enjoy an interlude of clear skies, when all things are silvered with frost, and the sun blinks crimson through the mists beyond the valley. The air, crisp and fresh, is wonderfully exhilarating, and as you swing along the firm footpath between the fields, you feel that it is grand to be alive.

And when you return homeward, the stars are switching on their silver lamps in the blue dome overhead and you will admit that it has been much better to seek the open air than to stay indoors "croodling" over the fire.

Though days are short and weather often uncertain and maybe inclement, there are many week-ends in winter when the days are sunny and mild or clear and frosty. Then we can go afield and enjoy hiking as much as in summer.

Many Youth Hostels remain open all through the winter, and there is plenty of good company gathered round the fire in the common room at evening, when all the boys, and the girls, have come in from their tramping over field and fell. Accommodation elsewhere than at the Youth Hostel is also generally more easily obtainable at this season, with the summer holidaymakers absent from the countryside.

Sensible Dress

In winter do not sally forth in the same flimsy rig-out you wore in the summertime. You often see girls and youths—and maybe older ones—hiking in bitter cold weather in the shortest of shorts, with blue knees showing. Do not imitate them. Go forth sensibly clad in warm woollen clothing, and you will be all the happier.

Have good stout stockings or socks, with thick-soled boots fitted with "tackets". Give your boots a good dressing of dubbin before setting out. Keep your feet warm and as dry as possible, and you cannot take much harm.

Puppets—(Continued from page 143)

This is where a bundle of odd scraps of cloth will come into its own. It is best to make a main undergarment, although this is not essential. A glance at Fig. 3 will give you an idea of the shape. The hands and forearms, already prepared, are sewn into the openings as shown.

When sorting out pieces required, choose colourful patterns, except, of course, for characters whose habitual dress is black or any particularly

In very cold and wet weather it is a good plan to line your boots with pieces of newspaper. Newspapers stuffed into boots at the end of the day will absorb any moisture. Wear warm woollen stockings or socks on winter outings; wool next the feet when tramping in cold weather means more comfort. Those who intend to spend the night away from home should carry a dry pair in the haversack, in case of need.

It is advisable to carry a good waterproof "mac" with you, or a cape that comes well down over your knees, in case of a rainy spell. It is as well, too, to carry a cap or sou'-wester, against a possible snow squall. A scarf also may prove useful. As to nether garments, possibly breeches are best for winter tramping. One's jacket will be no worse if fitted with a zipper fastener.

Avoid the Wilds

Unless you are an experienced hiker or mountain climber avoid the wilder hills and fells in winter. If you must travel over moors and remote ridges of hills at this time of year, do not go alone. Take a companion, for it is both companionable and helpful to have someone to share the "ups and downs" of the road.

It is in winter that unfortunate incidents may occur to hikers right away in remote and wild places. They may be trapped by sudden blizzards, cut off by dense fog, or incapacitated by some accident, such as slipping on icy rock and damaging a limb.

If you cannot have a companion then carry a good whistle, with which to send forth an appeal for aid if necessary, or to attract attention to your whereabouts. In crossing moors and fells keep to the tracks and paths. Do not cross unknown moors without aid of map and compass. And do not allow yourself to get belated in the midst of a moor at winter's nightfall. Carry an electric torch in your haversack—just in case!

Even if you feel indisposed to undertake a week-end tramp in wintertime, you may select a route

near home that will occupy you for a Sunday's walk, choosing a sort of circular route that will take you out by one path and in by another. But do not plan too long a distance; keep your mileage well within limits, so that you can arrive home by dark.

Week End Refreshments

Take refreshments with you, for it is not so easy to obtain food and drinks in the countryside on Sundays. Of course, if you are working a five-day week, Saturday is the better day for such an outing.

The countryside is ever attractive to the out-doors lover, even in winter. Choose a day when the pale sun shines along the hedgerows and slants across fields gleaming with moisture. Winter is not a "dead" season, and there are many attractive features about it that are as appealing as the soft young green of springtime.

Have you walked through a silent beech wood on a still winter's day when the wind is hushed, with the tall naked trees, so lovely of form, upstanding like the columns of some great cathedral, and not been impressed by the scene?

It is impossible not to feel dwarfed by the spaciousness of the natural aisles, so noticeable now that summer's drapery has been stripped from the wood. Only in winter, on a windless day, can you realize how wonderful is a beech wood.

Beauties to Enjoy

The countryside teems with interesting things in winter. There are migrant birds to be seen, and some are almost "tame", allowing you a near approach. Though lacking the bright colours of summer and autumn, the hedgerows are beautiful in their nakedness, and you now get better views of the countryside, with the curtains of summer's foliage withdrawn.

So, never mind the mud underfoot; your boots will clean. Get out of doors on every likely occasion. But choose your day if you can.

sober colour. Ideas for dressing your character can be found in any illustrated book. Small ornaments and jewellery, can also be used to good effect—if in keeping with character.

Plays and monologues can be used in presenting puppets to your family and friends. An improvised stage can be made, using a three-sided clothes-horse and curtaining. A provision box can be adapted for use as a

stage, size approximately 2ft. by 1ft. by 1ft. Even curtains and lighting can be fixed as needed.

Once tried, you will find puppetry an absorbing hobby, and when proficient, perhaps a profitable one. But do remember, when glancing round to gain inspiration for the features of your character, be careful not to be too accurate, or, who knows, you may find somebody suing you for libel!

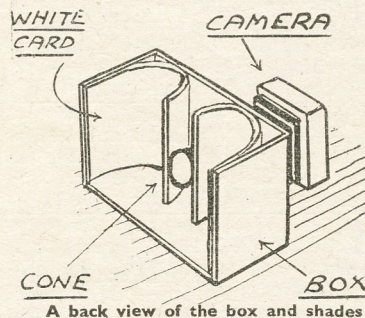
Home entertainment can be provided with this SIMPLE EPIDIASCOPE

HERE is just the thing to make for a little quiet diversion for the dark evenings. It is an epidiascope and will show snaps, etc. greatly enlarged on a screen. All you need is a few odds and ends, a few electric fittings, and a camera with a fairly big lens.

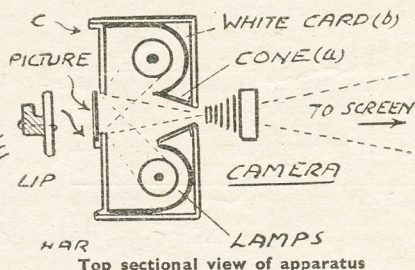
Obtain a stiff card box roughly of the proportions shown and placing your camera at one side mark how high the lens comes. Here cut a round hole and on the inside fit a card cone (a), which is held over the hole by glued angle-pieces and by the two sheets of white card (b) glued to the sides of the box and curved round to the edge of the cone. They are secured there with pronged paperfasteners.

Lamps Needed

Two electric lamps are now hung in the curve formed by the cards. These are suspended from the top of the box by their own flex, the height being such that the brightest part of the



A back view of the box and shades



Top sectional view of apparatus

bulbs is level with the centre of the lens. The lamps are wired together in parallel and plugged in to a light socket. They are kept at the right

height by a little insulation tape wrapped round the flex where it enters the card.

At the back of the box, right opposite the cone an opening about 2ins. by 3ins. is cut and fitted along the base and one side with lipped strip of wood fastened by pins.

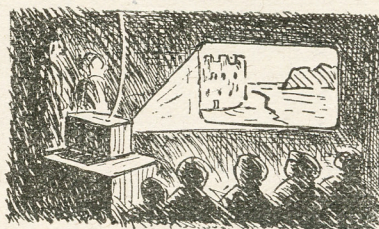
This back can be a separate sheet of card pushed into the open end of the box and held by its turned-down edge, as (c), or it can be an existing side.

How to Use

All is now ready. Set the box on a table with your camera in front of the hole with the back off and shutter open. A picture now placed against the opening in the back will appear on a screen rigged up in front of the camera. Sharp focus is obtained by moving the camera as a whole in and out.

If the picture goes straight to the screen it will be the wrong way round but this doesn't matter for many subjects. Reversal can be secured, however, by placing a mirror at 45 degrees in the path of the rays. The

light now shoots off at right-angles and the picture projected on a screen in the new path will be right way round.



Running a home "show"

It is important to bear in mind continually that the picture on the screen is entirely built up of reflected rays not direct rays as with the magic lantern. This means that every care must be taken not to lose light. To this end a screen which sends back a lot of light to the eye should be used. Screens differ in this respect.

A white-washed board is good, but some apparently white cloths absorb a lot of the rays and give a dull picture. Aluminium-coated plywood also yields a bright result as do the official home cine screens, if you can get one.

Points to Note

In the epidiascope itself, see to it that the lens is at full aperture and that the glass surfaces are perfectly clean. The reflector cards must be a good white and the lamps adjusted so the fullest brilliance is obtained.

Remember too that bright, clean pictures give better results than dark heavy ones. It is no good blaming the epidiascope if it will not give a satisfactory projection from a snap you can hardly see even through a microscope.

Finally remember that people generally would rather see a smaller bright picture than a bigger one that is dull and a strain to look at.

Crystal Set—(Continued from page 145)

If smaller diameter formers, or thicker wire, are used, then rather more turns will be required or high wavelength stations may not be reached. However, the actual number, or gauge of wire, is in no way critical.

Fig. 1 shows all the connections, and they can be checked as follows:

Aerial terminal to Detector, to fixed plates of tuning condenser, and to 1 on coil. Earth terminal to moving plates of tuning condenser, to one "switch" terminal, to 3 on coil, and to one Phone terminal. Second Phone terminal to Detector. 2 on coil to second "switch" terminal.

Connections will be easier if the ends of the windings on the coil are left long enough to reach to the various terminals.

With Aerial, Earth, and Phones connected, signals should be heard when the tuning control is turned. The detector, if of the adjustable type, should then be set so that volume is as great as possible.

Droitwich, broadcasting the Light Programme on the Long Waves, is particularly well received throughout the Midlands. Listeners farther away will naturally suffer some reduction in signal strength.

The Medium Wave transmitters are arranged to serve certain parts of the country, and the stations received will depend upon the locality. If it is desired to alter the wavelength to which the coil tunes, then turns can be added to increase the wavelength, and vice versa.

Because of the circuit which must

be used, crystal sets cannot tune very sharply. Furthermore, modifications which sharpen tuning also cause a reduction in volume. But in some localities it may be felt some volume can be sacrificed, and a condenser of about .0001 mfd. to .0003 mfd. can then be connected in series with the aerial lead-in. A pre-set condenser is best, as it can be adjusted to the most suitable value.

A similar effect can be obtained by reducing the length of the aerial, or by taking the aerial to a tapping on the coil. The more turns this tapping is from point 1 on the coil, the sharper will tuning become.

For all general purposes however where maximum volume is required connections should be made just as illustrated

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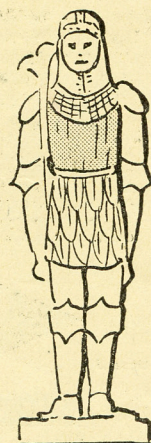
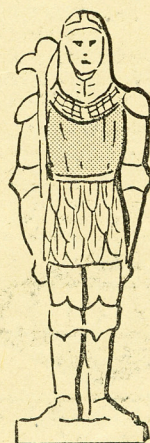
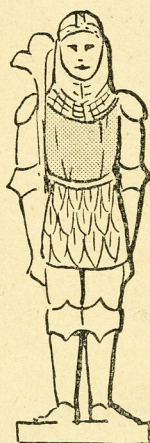
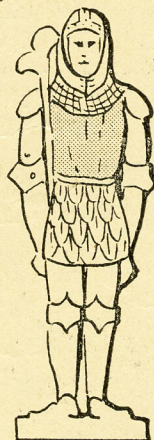
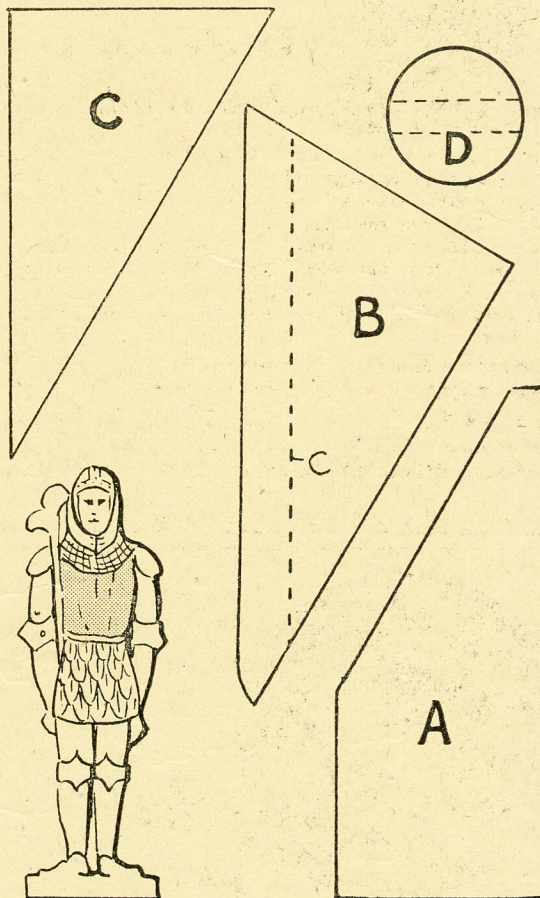
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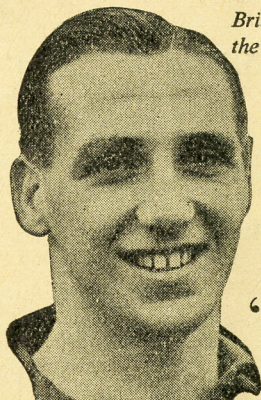
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Patterns for the SHOOTING ALLEY

For details see page 147





Brilliant England centre-forward,
the 'wisest head in Soccer' . . .

Tommy Lawton

SAYS

**"Here's how I
cross roads . . ."**

"Fancy foot-work scores on the football-field, where you want to confuse the other side's halves and backs. But on the road, confusion is the last thing you want — it's much too dangerous. Head-work is the thing, when you're crossing a street. Here's how I do it:

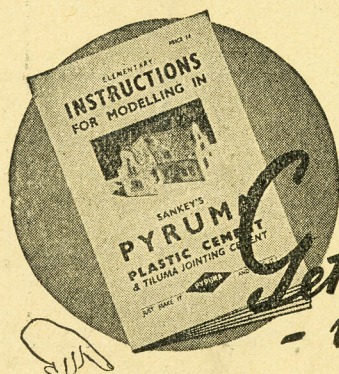
- 1 At the kerb — **HALT**
- 2 Eyes — **RIGHT**
- 3 Eyes — **LEFT**
- 4 Glance again — **RIGHT**
- 5 If all clear — **QUICK MARCH**

"I take it calmly — no running and dodging — because I wait for a proper gap in the traffic first.

"If you misjudge things in Soccer — well, you're very seldom hurt, anyway. But if you take chances in traffic, and a car or lorry charges you, you may be killed. And the same accident may kill other people. So watch your step, be a good Road Navigator, and cross all streets the Kerb Drill way."

T. Lawton

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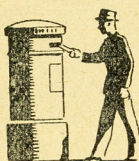
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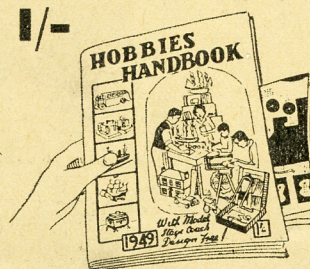
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